

## VI. CLAIMS

What is claimed is:

1. A method of screening a subject for breast cancer comprising: a) obtaining a tissue sample, and b) assaying for the presence of androgen receptor, wherein the presence of androgen receptor indicates an increased risk of or presence of breast cancer.
2. The method of claim 1, wherein the screening is in a cell.
3. The method of claim 1, wherein the subject is a mouse.
4. The method of claim 1, wherein the subject is a human.
5. The method of claim 1, wherein the subject is male.
6. A method of screening a subject for breast cancer comprising: a) obtaining a tissue sample, and b) assaying for the presence of androgen receptor mRNA, wherein the presence of androgen receptor indicates an increased risk of or presence of breast cancer.
7. The method of claim 6, wherein the screening is in a cell.
8. The method of claim 6, wherein the subject is a mouse.
9. The method of claim 6, wherein the subject is a human.
10. The method of claim 6, wherein the subject is male.
11. A method of treating cancer comprising administering to a subject an androgen receptor inhibitor.
12. The method of claim 11, wherein the androgen receptor inhibitor reduces nuclear translocation of androgen receptor.
13. The method of claim 12, wherein the androgen receptor inhibitor comprises ARA67, or fragment thereof.
14. The method of claim 11, wherein the androgen receptor inhibitor phosphorylates androgen receptor.
15. The method of claim 14, wherein the androgen receptor inhibitor comprises GSK2B or fragment thereof.
16. The method of claim 11, wherein the androgen receptor inhibitor reduces an interaction between the N-terminus and C terminus of androgen receptor.
17. The method of claim 16, wherein the androgen receptor inhibitor comprises hRad9 or fragment thereof.
18. The method of claim 11, wherein the androgen receptor inhibitor is ARA67, GSK2B, or hRad9, or fragment thereof.
19. The method of claim 11, wherein the androgen receptor inhibitor interacts with androgen receptor mRNA.
20. The method of claim 19, wherein the androgen receptor inhibitor comprises a functional nucleic acid.
21. The method of claim 20, wherein the androgen receptor inhibitor comprises an siRNA.
22. The method of claim 21, wherein the siRNA comprises SEQ ID NO:11.
23. The method of claim 11, wherein the cancer is breast cancer.
24. The method of claim 11, wherein the subject is a male.

25. A method of screening a composition for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and ARA67, GSK2B, or hRad9, and determining if the compound reduces the interaction between AR and ARA67, GSK2B, or hRad9.
- 5 26. A method of screening a composition for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of nuclear AR.
- 10 27. A method of screening a composition for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of phosphorylated AR.
28. A method of screening a composition for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of N-terminus AR interacting with the C-terminus of AR.
- 15 29. The method of claim 28, wherein the system is a breast cancer cell or cell line.
30. The method of claim 29, wherein the breast cancer cell line is MCF-7, 7R-75-1, or T47-D.
- 20 31. A composition for inhibiting androgen receptor activity comprising a protein, peptide, antibody, or functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, wherein the composition is not SEQ ID NO:1.
32. The composition of claim 31, wherein the composition comprises a fragment of ARA67, wherein the fragment binds androgen receptor.
- 25 33. A composition for inhibiting androgen receptor activity comprising a protein, peptide, antibody, or functional nucleic acid, wherein the composition reduces the interaction between the AR N-terminus and the AR C-terminus, wherein the composition is not SEQ ID NO:7.
34. The composition of claim 33, wherein the composition comprises a fragment of hRad9, wherein the fragment binds androgen receptor.
- 30 35. A composition for inhibiting androgen receptor activity comprising a functional nucleic acid, wherein the functional nucleic acid interacts with the mRNA of AR.
36. The composition of claim 35, wherein the composition comprises an siRNA.
37. The composition of claim 36, wherein the siRNA comprises SEQ ID NO:11.
- 35 38. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition competes with ARA67 for binding to androgen receptor, wherein the composition is not SEQ ID NO:1.
- 40 39. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition competes with hRad9 for binding to androgen receptor, wherein the composition is not SEQ ID NO:7.
40. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition competes with GSK2B for binding to androgen receptor wherein the composition is not SEQ ID NO:5.

41. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition binds androgen receptor as ARA67 binds androgen receptor, wherein the composition is not SEQ ID NO:1.
- 5 42. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition binds androgen receptor as hRad9 binds androgen receptor wherein the composition is not SEQ ID NO:7.
- 10 43. A composition for inhibiting androgen receptor activity comprising an antibody or a functional nucleic acid, wherein the composition reduces AR translocation to the nucleus, and wherein the composition binds androgen receptor as binds androgen receptor wherein the composition is not SEQ ID NO:5.
44. The composition of claims 38-43, wherein the composition is an antibody.
45. The composition of claim 44, wherein the antibody is a monoclonal antibody.
- 15 46. The composition of claim 44, wherein the antibody is a polyclonal antibody.
47. The composition of claims 38-43, wherein the composition is a functional nucleic acid.
48. The composition of claim 47, wherein the functional nucleic acid is an aptamer.
- 20 49. A compound produced by the method of screening a compound for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and ARA67, GSK2B, or hRad9, and determining if the compound reduces the interaction between AR and ARA67, GSK2B, or hRad9 and making the compound.
- 25 50. A compound produced by the method of screening a compound for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of nuclear AR and making the compound.
- 30 51. A compound produced by the method of screening a compound for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of phosphorylated AR and making the compound.
52. A compound produced by the method of screening a compound for the ability to modulate AR activity comprising administering the compound to a system, wherein the system comprises AR and determining if the compound decreases the amount of N-terminus Ar interacting with the C-terminus of AR and making the compound.